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ABSTRACT

To explore the professional socialization of technical writers and communicators, 98 professional technical communicators were administered a questionnaire identifying key concepts in the field. On seven occasions, professionals, teachers, and graduate students were asked to estimate how greatly these concepts, together with four additional terms including "me" (self concept), differed from each other. Metric multidimensional scaling revealed that students' attitudes changed in the following ways during their graduate programs: (1) variance among student attitudes decreased as a function of a common educational experience, (2) identification with their future profession and acceptance of the diverse concepts describing the profession increased, and (3) similarity with teacher and professional attitudes developed. (MM)

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THE ROLE OF COMMUNICATION IN THE PROFESSIONAL SOCIALIZATION PROCESS

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The Role of Communication in the Professional Socialization Process

Abstract

This paper examines the professional socialization of technical writers/communicators. Specifically, it describes how the attitudes and perceptions toward key concepts the profession held by of technical writing students change during their tenure in a graduate program. These attitudes are compared among the students over time as well as to professional communicators and teachers of technical writing. The results show that the variance in attitude among the students becomes smaller, they more closely identify with the profession and the material presented in courses. When compared to both teachers and professionals, there is an initial increase in attitude discrepancy but by the completion of the program, the students' attitudes become highly congruent with both the professionals and teachers.

Introduction

Annually, organizations spend millions of dollars training their employees. One goal of training programs is the socialization of the new members of the organization into its culture (Barnett, 1979). Organizations must communicate their norms, goals, and the information necessary for individuals to assume their roles in systems which are characterized by differentiation and the need for coordination or integration. This socialization is necessary for organizations to coordinate the activities of its members. Inpart, it is made possible by the development of what Durkheim (1947) labelled organic solidary (unity through interdependence) which manifests itself in the collective consciousness of the members of their organization.

That is, the organization's culture. Katz and Kahn (1978) identify socialization as one of the major activities of the maintance function of a social system.

In spite of its importance, the socialization process has received only sparse attention in the organizational communication literature. For example, Goldhaber (1979) discusses communication and training. While, he mentions the task and maintance functions of training programs, he concentrates his attention on communication training, rather than on the socialization which results from these activities. This paper will begin to address the role communication plays in the process of socialization in the organizational context. It examines the professional socialization of technical communicators. Specifically, it describes how the attitudes and perceptions toward key concepts of the prcfession held by students change during their tenure in a graduate program.

Theory

Socialization is the process of acquiring social norms which produce socially acceptable behavior and permits the interaction among members of a group or society as a whole. It is the process whereby individuals learn the culture of a social system. Professional socialization is the process of acquiring the knowledge, skills, values and norms of a specialized vocation. Indeed, individuals must obtain all the components which encompass the unique culture of an occupation and which makes it possible for members of a profession to interact about those elements (work together) which differentiates them from society at large. This process occurs through three mechanisms.

1. The social structure. Anderson and Western (1967) found

that social-economic status had an effect on the predispositions of law and medical students. From a communication perspective, the messages individuals receive early in their lives from family, peers and members members of their social class helps determine their attitudes toward their future profession. Katz and Kahn (1978) call this early socialization.

2. Formal education. The information students receive in courses, through interaction with teachers, professionals and peers, and experiences such as internships helps them to acquire the culture of the profession and transform them into highly specialized professionals (Becker, 1961, 1970; Bucher & Stelling, 1977). Katz and Kahn (1978) label this anticipatory socialization.

3. On-the-job training. Organizations are likely to have training programs and indoctrination procedures for producing identification with it, its goals and the individual's role in the organization. That is his/her profession (Katz & Kahn, 1978). This is where individuals "learn the ropes" (Geer, et al., 1968). The messages individuals receive while pursuing their careers alters their attitudes toward the profession.

This paper will focus on the socialization which occurs during formal education.

Historically, professional socialization has been primarily studied from a symbolic interactionist perspective (Becker, 1961, 1970; Glazer, 1968; Strauss & Rainwater, 1962; Bucher & Stelling, 1977). This orientation has its origins in the writings of George Herbert Mead (1934). He suggested that it was through the process of social interaction that an individual develops a concept of self. To do so,

> ...it is not sufficient for him merely to take the attitudes of other human individuals toward himself and toward one another within the human social process, and to bring that social process as a whole into his individual experience merely in these terms: he must also, in the same way that he takes the attitudes of other individuals toward himself and one another, take their attitudes toward the various phases or aspects of common social activity or set of social understandings in which, as members of an organized society or social group, they are all engaged and he must then, by generalizing these individual attitudes of that organized society or social group itself, as a whole, act toward different social projects which at any given time it is carrying out...(1934:152).

This process is made possible by individuals exchanging symbols, stimuli which are culturally defined and generally recognized conventions of meaning (Blumer, 1968). Their meaning is agreed upon rather than intrinsic in the stimulus which evokes a common response.

In terms of professional socialization, people are transformed into professionals as a results of their interactions with members of the social group (the profession). It is through these common social activities that they learn the meaning of the group's symbols (professional jargon) and the generalized set of attitudes, values and beliefs common to members of the profession and which make it possible to perform professional activities.

For the symbolic interactionist, socialization takes place on a symbolic level. During the process of social interaction the relations (definitions) among the symbols change. For the

individual, these relationships gain clarity and specificity. They become consistant with the meanings agreed upon by the elders of the profession. For a cohert of students, a common culture is developed due to their shared experience in classes and their interaction with the same symbols. This common culture is based on the meanings representative of the generalized or average member of the profession. Deviant opinions are eliminated either through expulsion from the social group or by modifications making them more consistant with the shared professional culture.

Students enter a professional program with diverse opinions about their future careers. Their views of the discipline and their level of commitment vary. They lack a common understanding of the profession and may not possess the common set of symbols which define the profession. Or, they may use them inconsistantly. Upon completion of the program, the student is a professional who shares a common culture and uses the group's symbols in a common way. This is a result of the student's interaction during the program. Hughes describes this process for the medical profession (1958: 119),

> The education of members of the (medical profession) is a set of planned and unplanned experiences by which laymen, usually young and acquainted with the prevailing lay medical culture, becomes possessed of the technical and scientific medical culture of the profession.

Becker and Carper (1956) describe this as the "acquistion of ideology" which works as a mechanism to promote commitment to the occupation. This develops from classroom interactions and informal participation with teachers. Bucher and Stelling (1977) review a number of studies which examine the development of commitment during the professional socialization process. They

conclude that, "...it is important to look at the extent to which training programs succeded in developing commitment and the forms it took (1977:28)". One indicator of commitment is the extent to which individuals identify with the professional label and their ability to relate the diverse symbols which define the specialized occupation.

While it has been suggested that teachers influence the socialization process through classes and other interactions, little research has been performed to describe the mechanisms of this process.

> Although I know of no systematic evidence on the influence of teachers, it is my personal observation that individuals in successful careers-- at least in the professions--are able to name several influencial teachers, ranging back to elementary school, to recall names, the grade, and the subject matter (Moore,1970:872).

Based upon the above discussion, the following theoretical hypotheses may be proposed.

H1: During the socialization process, the variance in attitudes toward or perceptions about the future profession among a cohert of students will decrease.

H2: During the socialization process, students will identify more closely with their future profession.

H3: During the socialization process, students will increasely be able to relate the diverse concepts which define their future profession.

H4: As a result of the material presented in

classes, students will identify more closely with those concepts presented in their classes.

H5: As a results of the socialization process, student attitudes toward their future profession, over time, will become more similar to practicing professionals.

H6: As a result of the socialization process, student attitudes toward their future profession, over time, will become more similar to teachers of the profession.

One criticism of the symbolic interactionist perspective has been that it is qualitative and as a result not precise enough to make accurate predictions about social behavior. However, useful insights have been gained through observations of the symbolic interactions of groups. These have lead to a number of theoretical hypotheses which may be tested using precise quantitative procedures. This paper will test a number of theoretical statements derived from this perspective with quantitative procedures. The next section of this paper describes an empirical study designed to test the theoretical hypotheses presented above.

Methods

The Galileo System

The attitudes and perceptions of a group and how they its members change over time may be measured through a variant of metric multidimensional scaling--the Galileo System (Woelfel & Fink, 1980; Woelfel, et al., 1980b). Barnett (1979) describes how these procedures may be applied for the measurement of

organizational culture. The system may be described as follows.

The process of measuring a group's attitudes toward a conceptual object (In this case, the profession of technical communication.) begins by determining the domain of concepts (words or phrases) they use when evaluating the concept. This is done through indepth interviews or open ended questionnaires with a representative sample from the population of interest (professional technical communicators), although theory may guide the selection of concepts. For example, a concept of self (me, myself, you, yourself) should be included. This makes it possible to measure the attitudes toward individual concepts.

The second step is to precisely measure the relationships among the most frequently mentioned concepts. This is done using the method of pair-comparisons (Thurstone, 1927; Woelfel & Fink, 1980). Randomly selected subjects from the same population as in the preliminary interviews complete a series of direct pair-comparisons among all possible pairs of concepts. They estimate the dissimilarity, distance or difference between $N(N-1)/2$ pairs of concepts (N = the number of concepts). The researcher provides a criterion pair or metric standard for the subjects to use as a unit measure when making the comparisons. Subjects make direct magnitude estimates of the distance among the concepts as ratios to the criterion metric. Typically, the question is worded using the form,

If X and Y are U units apart, how far apart are concepts A and B?

This format allows the respondent to report any positive number rather than being forced to choose a point on a fixed choice scale as in the case with the Likert or Osgood's Semantic Differential Scales. The direct magnitude scale has a number of

advantages (Danes & Woelfel, 1975; Wigand & Barnett, 1976; Barnett, et al., 1980). It does not build error into the measurement process. The fixed choice scales build in 14 to 20 % error because they discriminate only five or seven differences. This error coupled with unreliability often renders the results of these measures invalid. Further, because these scales only make gross discriminations, they are incapable of precisely measuring attitude change over time. The traditional scales are bounded. This truncates extreme attitudes and distorts attitude change of strongly held opinions.

The procedures advocated here have none of these problems. They do not build error into the measurement process. They are capable of fine discriminations and are ideal to describe attitude change. In addition, because they are more precise, fewer cases are needed to obtain the same information about a group's opinions.

Subjects perform direct magnitude estimates of the distances among concepts reliably. Barnett (1972) and Danes and Woelfel (1975) report reliability coefficents for the method of .85-.90. Gordon (1976) reports reliabilities ranging from .93 to .99 with approximently 100 subjects in nine different conditions.

The completion of the data collection operations results in a concepts by concepts by subjects matrix (S) which has the following properties. It is square and symmetrical, and it is of order N. Each cell in this matrix (sij) represents the distance between concepts i and j. The diagonal contains zeros, because sii represents the dissimilarity of concept i from itself, by definition, zero.

To determine the perceptions of a group, S is averaged across

subjects to form an N by N concepts matrix $\bar{S}$, where any entry $\bar{s}ij$ is the mean distance between conepts i and j, as seen by the average member of the group (Barnett, et al., 1974, 1976; Woelfel, et al., 1980b).

While S provides an accurate description of the meaning of the set of concepts as perceived by the group under study, it is too cumbersome to be effective. Hence, researchers normally reduce it to usable proportions through metric multidimensional scaling (MMDS). MMDS typically provides the researcher with the following information: the eigenvalues (the proportion of variance contributed by each dimension), and the Cartesian Coordinates (the locus for each concept on each dimension). This process is mathematically identical to converting a matrix of distances among cities to a Cartesian Coordinate system where latitude, longitude and altitude are the reference axes and the cities location on each of these dimensions are given. From the coordinates a graphic representation such as a map may be drawn. In that special case, an N by N table of intercity distances may be described with little loss of information in a reduced two-dimensional Euclidean space. In defining a set of complex terms, the spatial manifold may contain up to N-1 dimensions. If any of the dimensions are imaginary, the space is Riemannian.

As a result, MMDS produces a semantic map, which has many characteristics in common with geographical maps. Perhaps the most significant of these is that MMDS maps permit the application of standard navigational principles (derived from vector analysis) to define the spatial separation between ideational concepts and the ways in which spatial relationships may change through the application of certain forces (Woelfel & Saltiel, 1978). Once the coordinates are generated, vector analysis may be applied to

determine the optimal persuasive message to alter a particular set of relations among the concepts. Since this aspect of the Galileo System was not applied in this research, it will not be discussed here. For a complete discussion of how it can be used to design precise message strategies see Barnett, et al. (1976), Serota, et al. (1977) and Woelfel, et al. (1980b).

Attitude change (the change in meaning) may be examined by repeating the pair-comparison phase and transforming the data for each point in time into multidimensional spaces. To compare several points in time or different groups at the same time, the spaces are rotated to a least squares best fit which minimizes the departure from congruence among the spaces. When the knowledge of a concept's history or that certain ones were manipulated is known, alternative rotational algorithms should be used (Woelfel, et al, 1979). Change in positon of the concepts may be then calculated by subtracting the coordinate values across time. From these change scores one can fit trajectories of motion to describe the relative changes in attitudes (Barnett, 1981; Barnett & Kincaid, in press). The algorithms necessary to perform these analyses are described by Serota (1974) and Woelfel and Fink (1980).

Among its applications, the Galileo System has been used to study organizational communication (Barnett, 1979; Albrecht, 1979), the professional socialization of accountants (Siegel, 1980) and to describe the perceptions of technical communicators toward various aspects of their profession (Harkins, 1978,1979; Barnett & Carson, 1980). In this study, the process of socialization will be described by examining the changes in the relations among the concepts (symbols) which define technical communication for a cohert of students during their formal professional education.

Operationalization

The concepts for this study were selected through a pretest questionnaire completed by professional technical communicators in attendence at Rensselaer Polytechnic Institute's (RPI) annual Technical Writers' Institute in June, 1979. 98 subjects were asked the following questions to generate the words or phrases (symbols) technical communicators use to define the nature of the profession--its boundaries, the problems with which its concerned, its basic tools and methods and, the relationship of the field to larger publics and institutions. Where does the profession fit within society (Becker & Carper, 1956).

What is technical writing?
What is technical communication?
How does technical communication differ from technical writing?
What skills should a technical writer have?
What academic disciplines should a technical writer study?
What skills should a technical communicator have?
What academic disciplines should a technical communicator study?

A content analysis was performed to identify the terms most frequently used to describe concepts related to technical writing and communication. They were:

1. business and industry
2. verbal skills
3. the media (TV, film, radio)
4. technology
5. rhetoric
6. English

7. graphics
8. information
9. science
10. engineering
11. writing skills

At this point a second questionnaire was constructed by pairing each concept with each other concept and, for theoretical purposes, four additional concepts were added,

12. computers
13. technical writing
14. technical communication
15. me (the self concept)

Although the concept "computers" was mentioned infrequently, it was included in this study to examine the effects of curriculum on professional socialization. Further, with the increased use of computers in the technical communication process, the authors wanted to measure the attitudes of technical communicators toward this concept. The last three concepts made it possible to test the theoretical hypotheses.

Additionally, subjects were supplied with a standard metric (a base scale or ruler) upon which to base their estimates of how different they perceive each concept was from each other. For this study, the standard was,

> If science and information are 10 Galileos apart, how far apart are the following items in each matched pair?

Subjects and Procedures

This study used three different groups of subjects, 1. students in a graduate program in technical writing/communication,

2. professional technical communicators, and, 3. teachers of technical writing. The attitudes of technical writing students in the 1980-81 cohert in RPI's masters program were examined three times. The first measurement occurred when they entered in September, 1980, N=41. The second measurement was made at the end of the first semester, in December, N=37. And the final measurement in May, 1981, upon completion of the program. Due to attrition and refusals, the sample size for the final measurement was only 33.

Thus, these subjects make up a panel. There are a number of problems with panel designs. Among them are the effects of testing or sensitization and subject mortality (Campbell & Stanley, 1963). The later problem occurred in this research. For these reasons, past research (Barnett, 1981) has argued against the use of panels and recommended the use of independent random samples (generated from the same population) for each measurement. However, when the total population is small and the study only descriptive in nature the use of this design may be justified.

RPI's graduate program in technical writing was established in 1955 to provide theoretical and practical educational experience for students entering the professions of technical and scientific writing and technical journalism. As the first program of its type it has played a significant role with the profession of technical communication and served as the model for other institutions which have established similar programs.

Although the program first attracted students educated in the sciences or engineering, today approximately half the students have undergraduate degrees in the humanities and social social sciences. Generally, graduates find employment in industry as editors or writers of technical materials. The 1981 class, focus

of this research, was 57% female and 43% male. 38% had degrees in the natural sciences. They ranged in age from 21 to 46. No one had professional experience in technical communication. The mean grade point average was 3.65 on a four-point scale. Approximately 80% said that their reason for going into technical communication was that they were unable to find employment with their undergraduate degrees.

Professional technical communicators were surveyed at two points in time, June, 1980 (N=68) and June, 1981 (N=42). They were in attendence at RPI's annual Technical Writing Institute.

Teachers of technical writing were also surveyed twice, June, 1980 (N=65) and June, 1981 (N=51). They were in attendence at RPI's annual Technical Writing Institute for Teachers.

Participants at the Technical Writers' Institute consisted entirely of working professional technical communicators. All were employed by business, industry or government in the United States. Experience levels ranged from less than one year (10%) to 25 years or more (12%).

Participants of the Technical Writing Institute for Teachers consisted of writing teachers at two or four year colleges or universities. Most taught in the United States. The mean teaching experience was 10.2 years, and for technical writing, it was 3.6 years.

In summary, seven measurements were made. In June, 1980, one each for professionals and teachers. In September and December, 1980 and May, 1981, the students were surveyed and in June, 1981, two different groups of teachers and professionals. These seven measurements made it possible to describe the change in students

attitudes as the go through a graduate program in technical communication and to compare these changing opinions with professional and teachers of technical writing/communcation.

Results

Overview

All seven measurements resulted in a two dimensional spatial configuration. This was determined by a scree test (Barnett & Woelfel, 1979). The percent variance accounted for by these dimensions was between 67.4% and 89.1%. As an indication that all groups used the same two dimensions to differentiate the concepts, the correlations of the concepts' locations on the equivalent dimensions were calculated. The correlations ranged from a low of .87 to a high of 1.0. The mean was .95. Thus, the dimensions were used consistantly among all seven groups. The first dimension differentiated the scientific concepts from the humanitistic ones. The second, differentiates the media from written communication. In all cases, the self concept is placed near the humanities and technical writing/communication. A graphic representation of the responses on the two dimensions is presented in Figure 1. In the interest of clarity, the concepts' locations for the two groups of teachers and professionals were averaged.

FIGURE 1 ABOUT HERE

While there is a great deal of similarity among the groups, there are some systematic differences. These differences were determined with a rotational procedure which minimized the motion of all concepts except me which was allowed to vary. This was because the socialization process involves changes in the self relative to other concepts. The average difference between

teachers and professionals was only 2.84 units in 1980 and 3.28 units in 1981. Generally, they viewed the relationship among the concepts to be the same. However, there were differences in the self-concept. Professionals, on the average, placed themselves closer to business and industry (14.5, 1980; 11.5, 1981; computers (11.4, 14.9), technical communication (8.6, 7.3), technical writing (8.5, 6.2), science (11.9, 14.4) and engineering (16.4, 16.4) than did teachers (business and industry (17.0, 26.8), computers (17.4, 15.0), technical communication (8.9, 10.5), technical writing (9.1, 10.1), science (14.2, 16.3) and engineering (19.5, 29.6). On the other hand, teachers, saw themselves to be closer to verbal skills (2.9, 3.8), English (3.9, 2.4) and rhetoric (5.2, 4.0) than did the professionals (verbal skills, 9.8, 7.2; English, 8.5, 7.4; rhetoric, 12.6, 11.3). This indicates that professionals have more positive attitudes toward business and industry, computers, technical writing and communication, science and engineering than do teachers. Further, they are more likely to perform activities related to these concepts and do so more frequently (Woelfel, et al., 1980b). Teachers have more positive attitudes toward the humanities than do the professionals. The differences in self concept between these two groups are summarized in Table 1. The changes among the student groups and how they compare with the teachers and professionals will be discussed when we evaluate the specific hypotheses below.

TABLE 1 ABOUT HERE

The Hypotheses

H1: Hypothesis 1 suggests that the variance in attitudes or perceptions among the technical writing students will decrease as a function of their common experience in classes and their

interactions about the symbols which define technical writing and communication. Descriptively, the data supports the hypothesis. The mean variance of the 105 pair comparisons for the students at the first point in time was 15.14. At time two, it was 14.92, and, 11.58, at time three. Thus, it appears that the students developed a common set of perceptions about their future profession. This may be accounted for, in part, by student attrition. It seems likely that those students who had deviant opinions about technical writing/communication would drop out of the program.

H2: Hypothesis 2 suggests that the students will identify more closely with their future profession. Their changes in self-concept are presented in Table 2 and graphically in Figure 1. They show that over time the students consistantly identify more closely with technical writing (t1, 11.2; t2, 11.1; t3, 10.0), technical communication (11.8, 11.2, 10.6), the media, graphics and writing skills. They consistantly become further from verbal skills, English and rhetoric. While they became closer to technology, computers and engineering than when they began, there appears to be a slight reversal. They were closest to these concepts at the end of the first semester.

TABLE 2 ABOUT HERE

H3: The third hypothesis suggests that the students would be able to associate the diverse concepts which describe technical writing/communication to a greater degree. The data supports this hypothesis. The trace, the sum of the variance of the mean estimates, of the spaces gets smaller over time. At time 1, it was 1806.1, at time 2, 1603.1 and at time 3, 1497.5. Thus, the students are better able to relate the diverse domain of concepts which make up technical communication.

H4: Hypothesis 4 states that the student will become closer to those concepts presented in their courses. In the first semester they took a computer course. The distance between the average self and computers dropped from 31.2 to 20.6 units. During the second semester, a graphics course was required. The distance between the self and graphics also became smaller, but only slightly. It was 17.0 at time 2 and 16.9 at time 3. Writing was required during both semesters. As indicated above, the average distance between technical writing and writing skills and the self became smaller during both semesters. Thus, this hypothesis is supported by the data.

Up to this point we have only examined the changes in the students' attitudes toward technical communication. Hypothesis 5 and 6 describe the changes in student attitudes in comparison to professional technical communicators and teachers of technical writing.

H5: Hypothesis 5 states that as a result of the socialization process, the student attitudes will become more similar to professional technical writers. At time 1, the average difference between the two groups was 3.0. At time 2, this difference was slightly larger, 3.1. However, by the completion of the program, time 3, it was smaller, only 2.3 units. These results indicate that an initial increase in attitude discrepancy occurred before they became more similar. An examination of Figure 1 reveals that the position of technology, rhetoric, computers and graphics appears further from their position for professionals at time 2 than at times 1 and 3. The initial increase in discrepancy may be due to the information the students receive during the fall semester at RPI. During this term they took courses in Communication Theory, Mass Media, and Organizational Communication

Theory which few of the professionals have taken. The second term was specifically geared to professional skills.

H6: Hypothesis 6 states that students' attitudes will become more similar to teachers of technical communicationas a result of the socialization process. The discrepancy between teachers and students at time 1 was 3.0 units. At time 2, it was 3.4 units and at time 3, 2.7 units. As in the case of the professionals, there was an initial increase in attitude discrepancy before the two groups became more similar. Figure 1 shows that the position of rhetoric and graphic appear further from their position for teachers at time 2 than at times 1 and 3.

Discussion

This paper has discussed a research project which examined the process of professional socialization of technical communicators. It used MMDS to describe the change in attitudes of students toward their future profession and compared these attitudes with professional technical writers and teachers of technical writing. It was learned that,

1. Variance in student attitudes decreases as a function of their common educational experience.
2. Students, over time, identify more closely with their future profession and the concepts which describe the profession.
3. Over time, they are better able to relate the diverse concepts which describe the profession.
4. Students develop more positive attitudes toward the concepts presented in their classes.
5. They develop attitudes similar to both teachers and practioners of the profession after an initial increase in attitude discrepancy.

The described research has some faults regarding external validity, generalizability. The results reported here should not be generalized to all professional socialization processes or even to all technical communication programs. The results were based upon a single cohert of students in a single graduate program which exists in an unique environment. Faculty, curriculum and students changes over time and across universities to say nothing of differences in academic and professional disciplines. The samples of professionals and teachers may not be representative of all technical communicators or teachers of technical communication. These individuals were attendees at a professional development workshop. Therefore, it is safe to assume that they are highly motivated to keep up with the changes in their profession and identify more closely with their professions. As a result, they may be atypical. Although, the authors have replicated this research with a number of other groups of teachers and professionals and have found similar results in all instances (Barnett & Carson, 1980). Also, this may account for the high degree of similarity among all the groups. The same instructors who conducted these workshops taught the students in the graduate program.

In spite of the above limitations, how can these results be applied to facilitate the development of the profession of technical communication? They can be used to develop and evaluate curriculum and the effectiveness of a graduate program in technical commmunication. The multidimensional space of professionals represents a convenient criterion against which to compare students. Ideally, there should be little if any discrepency among the concepts which describe technical communication between current professionals and students who have completed a graduate program in technical communication and are

being placed in industry. What differences that do exist should be attributable to "learning-the-ropes". By examining these differences, teachers will know if they have been successful in socializing their students.

By examining the discrepancies between the professions and students upon completion of the program, one can evaluate curriculum, Were all the concepts which describe the profession treated adequately? What modifications in presentation should be made so that the students can develop attitudes congruent with practicing professions? Using RPI as an example, the greatest differences between the graduating students and the professionals concerned the concepts technology (7.4), graphics (7.2), science (6.6) and engineering (8.3). These compare to the mean difference between these two groups for all 15 concepts of only 2.3 units. By examining Figure 1, it is clear the professionals place themselves much closer to the scientific concepts than do the students. Based upon these results, it appears to be constructive to increase the technical-scientific-engineering related material in the program. An alternative to modifying the already dense curriculum would be to change the admission requirements to include a greater number of technical courses. This could be accompanied with the recruitment of students with technical undergraduate degrees. Finally, this method may be used to develop persuasive messages designed to alter the student's self concept so that they would have more positive attitudes toward science and engineering (Woelfel, et al., 1976; Serota, et al., 1977).

The graduate program already has one course in graphics and considerable emphasis is placed upon visual presentation of information in other courses. These results suggest that the

course is having little impact upon the students and imply that a modification is in order to reduce the discrepancy between the professionals and graduating students in this area.

Future research is necessary to examine how communication operates in the socialization process of individuals into their organizational roles. This paper examined the professional socialization of technical communicators while in school. Thus, it represents a single case study with few implications to organizations as a whole. Training programs should be studied to examine the role of communication in the development of organizational culture. In this way, it will be possible to assess the effects of training programs toward achieving socio-emotional-maintance goals as well the explicit task related function of coordinating the members future behavior.

Summary

This paper examined the professional socialization of technical writers/communicators. Specifically, it described how the attitudes and perceptions toward key concepts of the profession held by technical writing students changed during their tenure in a graduate program. These attitudes were compared among the students over time as well as to professional communicators and teachers of technical writing. The results showed that the variance in attitude among the students became smaller, they more closely identified with the profession and the material presented in the courses. When compared to both teachers and professionals, there was an initial increase in attitude discrepency but by the completion of the program, the students' attitudes were highly congruent with both the professionals and teachers. Applications of the results were discussed.

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TABLE 1

DISTANCE TO SELF CONCEPT

	TEACHERS 1980	TEACHERS 1981	PROFESSIONAL 1980	PROFESSIONAL 1981
Business & Industry	17.0	26.8	14.5	11.5
Verbal Skills	2.9	3.8	9.8	7.2
Me	--	--	--	--
The Media	12.3	13.1	15.3	11.4
Technology	13.5	15.1	14.8	12.4
Rhetoric	5.2	4.0	12.6	11.3
English	3.9	2.4	8.5	7.4
Computers	17.4	15.0	17.4	14.9
Graphics	12.9	11.0	11.0	11.6
Information	6.6	8.3	9.1	5.3
Technical Communication	8.9	10.5	8.6	7.3
Technical Writing	9.1	10.1	8.5	6.2
Science	14.2	16.3	11.9	14.4
Engineering	19.5	29.6	16.4	16.4
Writing Skills	3.2	2.5	7.1	5.8

1980 - Mean Differences (Teachers-Professionals) 2.84

1981 - Mean Differences (Teachers-Professionals) 3.28

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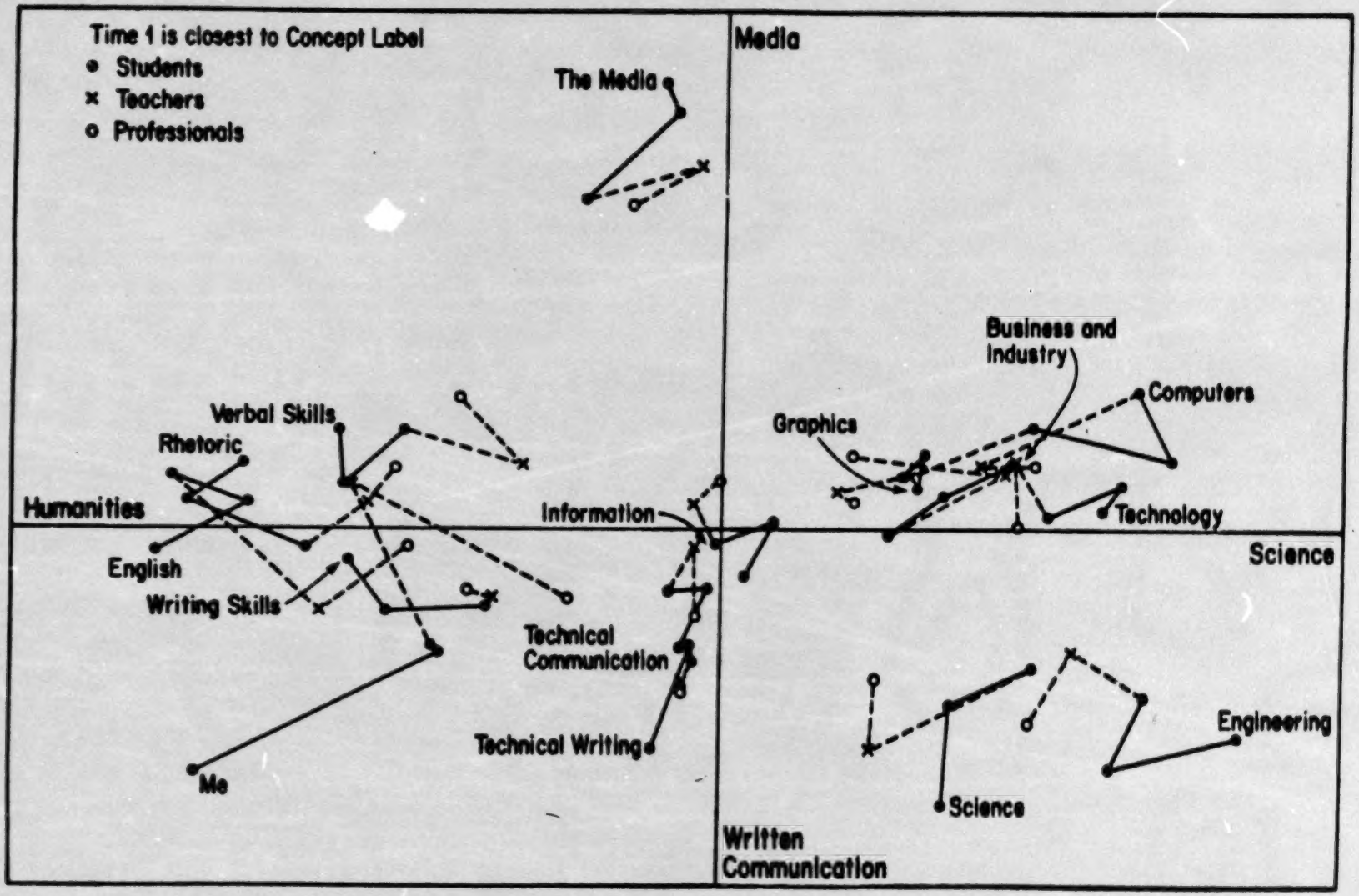
TABLE 2

DISTANCES BETWEEN SELF AND VARIOUS CONCEPTS OVER TIME

	T1(September)	T2(December)	T3(May)
Business & Industry	24.8	19.1	23.3
Verbal Skills	5.6	6.3	9.6
Me	--	--	--
The Media	20.7	16.9	13.1
Technology	27.8	18.5	20.9
Rhetoric	13.3	13.8	16.7
English	6.2	7.6	12.5
Computers	31.2	20.6	21.0
Graphics	18.6	17.0	16.9
Information	11.3	9.6	10.8
Technical Communication	11.8	11.2	10.6
Technical Writing	11.2	11.1	10.0
Science	17.4	15.7	17.4
Engineering	30.7	20.2	22.2
Writing Skills	9.7	7.56	6.5


Time 1 is closest to Concept Label
• Students
× Teachers
o Professionals
The Media
Media
Business and Industry
Computers
Graphics
Verbal Skills
Rhetoric
Humanities
Information
Technology
Science
English
Writing Skills
Technical Communication
Technical Writing
Engineering
Me
Science
Written Communication